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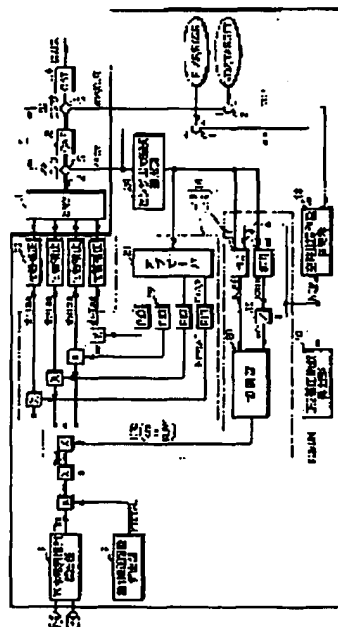
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## (54) AIR-FUEL RATIO CONTROL DEVICE FOR EXHAUST SYSTEM OF INTERNAL COMBUSTION ENGINE AND PLANT CONTROL DEVICE

(57)Abstract:

**PROBLEM TO BE SOLVED:** To construct algorithm for controlling an air-fuel ratio of the exhaust system of an internal combustion engine containing a catalyst device so that the algorithm may have simplicity suitable for computer processing and to perform stable and high-precise control.

**SOLUTION:** An objective exhaust system E is modeled by a discrete system in a state to contain an answer delay element and a useless time element, and a parameter set by the discrete system model is identified by data of an output KACT of an O<sub>2</sub> sensor 5 situated upper stream from a catalyst device 3 and data of an output V02/OUT of an O<sub>2</sub> sensor 6 situated downstream from the catalyst device 3. An air-fuel ratio of exhaust gas entering the catalyst device 3 is controlled through using sliding mode control such that, by using the parameter of an identified discrete model, the output V02/OUT of the O<sub>2</sub> sensor 6 is converged to a given target value V02/TARGET.



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